CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1. A method for traffic shaping for packet data communications comprising:

establishing one or more packet queues, each queue carrying packet traffic for a particular connection having a desired packet transfer rate;

directing each incoming packet to the queue assigned to the connection over which the packet is received;

providing a frequency for packet transfer in a series of frequencies;

generating packet transfer rates appropriate for each existing output connection by combining packet transfer frequencies; and

transferring a packet from an assigned queue in response to combined transfer frequencies.

2. The method of claim 1 wherein said directing step further comprises: receiving said packets by receiving logic.

3. The method of claim 1 wherein said providing a frequency step further comprises: generating packet transfer signals by a timing logic circuit.

4. The method of claim 1 wherein said transferring a packet step further comprises: transferring by cell transfer logic circuits in response to said combined transfer frequencies.

5. The method of claim 1 further comprising:

diverting a packet from an assigned queue in the event that the assigned queue is filled above a threshold by reception of said packet.

6. The method of claim 1 further comprising:

2 inhibiting generation of a packet transfer signal if any higher frequency output is enabled

3 to generate a packet transfer signal.

1 7. The method of claim 1 further comprising:

2 establishing lists of associations between a timing circuit and packet queues, said timing

3 circuit enabled to generate packet transfer signals for any queue on its list.

1 8. The method of claim 1 further comprising:

2 generating a phase difference between an outputs from timing circuits for neighboring

3 frequencies in the series of frequencies.

1 9. The method of claim 1 further comprising:

2 generating each frequency of said series of frequencies so that the frequencies are repre-

3 sented by F/v, where F is a maximum packet transfer rate and v is an integer value.

1 10. A method for operating a switching hub having a switching fabric, at least one

2 input adapter and at least one output adapter, one or more of said input or output adapters

3 including a traffic shaping apparatus, comprising:

4 providing one or more packet queues, each queue carrying packet traffic

5 for a particular connection having a desired packet transfer rate;

6 directing each incoming packet to the queue assigned to the connection

7 over which the packet is received;

8 providing a frequency in a series of frequencies to generate a packet trans-

9 fer rate;

10 combining said frequency for a plurality of said queues to generate packet

11 transfer rates appropriate for each existing connection; and

12 transferring a packet from the assigned queue to a given output connection in response to

13 combined frequencies appropriate to the given output connection.

1 11. A computer readable media having instructions which a computer responds to for

2 practice of the methods of claim 1 or claim 10 written thereon.

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1   12.   Electromagnetic signals propagating over a computer network, a computer re-

2   sponding to said electromagnetic signals for practice of the method of claim 1 or claim